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PART 4.

DECEMBER, 1909.

THE
BRITISH WARBLERS

A HISTORY WITH PROBLEMS
OF
THEIR LIVES

BY

H. ELIOT HOWARD, F.Z.S., M.B.O.U.

ILLUSTRATED BY HENRIK GRÖNVOLD

London

R. H. PORTER

7, PRINCES STREET, CAVENDISH SQUARE, W.

Price 21s. net.



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EGGS OF BRITISH WARBLERS. PL. II.

1-6. SAVY'S WARBLER. 7-12. GRASSHOPPER WARBLER. 13-18. CHIFF-CHAFF.
 19-24. WILLOW WARBLER. 25-30. WOOD WARBLER. 31-36. MELODIOUS WARBLER.
 37-44. ICTERINE WARBLER. 38-44. DARTFORD WARBLER.

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H. ^{Henry}ELIOT HOWARD, F.Z.S., M.B.O.U.

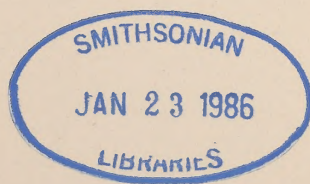
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Siberian Chiff-chaff ... „

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WHITE-THROAT

WHITETHROAT.

- Curruca cinerea**, *Meyer*, *British Birds*, folio Ed., vol. i (coloured plate figuring adult male and egg) [1835-43]; *Hewitson*, *British Oology*, 1st Ed., vol. i, pl. 116, 2 figs. (eggs) [1836]; *id.*, *Eggs of British Birds*, 2nd Ed., vol. i, pp. 96-97, pl. 27, figs. 5 and 6 (eggs), 1846; *Booth*, *Rough Notes*, vol. ii, pp. 53-54, 1883.
- Sylvia cinerea**, *Macgillivray*, *British Birds*, vol. ii, pp. 350-356 (woodcut of head), 1839; *Hewitson*, *Eggs of British Birds*, 3rd Ed., vol. i, pp. 130-131, pl. 35, figs. 1 and 2 (eggs), 1854; *Gould*, *Birds of Great Britain*, vol. ii, 2 pp, pl. 57 (coloured figures of adult male and female), 1865; *Seebohm*, *British Birds*, vol. i, pp. 405-409, pl. 10, fig. 5 (egg), 1883; *Lilford*, *Coloured Figures*, vol. iii, p. 50, pl. 25 (coloured figures of adult male and female), 1885; *Saunders*, *Manual of British Birds*, 2nd Ed., pp. 41-42 (woodcut), 1897.
- Sylvia rufa**, *Yarrell*, *British Birds*, 4th Ed., vol. i, edited by Newton, pp. 406-409 (woodcut), 1873; *Dresser*, *Birds of Europe*, vol. ii, pp. 377-381, pl. 57 (coloured figures of adult males), 1876.

Croatian, *Prosta Grmusa*; Danish, *Torn-Sanger*; Dutch, *Grasmusch*; French, *Fauvette grise*; German, *Dorn-grasmücke*; Hungarian, *Köyönsége posyáta*; Italian, *Sterpazzola*; Norwegian, *Graasanger*; Swedish, *Torn-Sångare*; Russian, *Polewaya*; Polish, *Pokryjwka popielata*.

DESCRIPTION OF THE PLUMAGE.

Adult Male in Spring.—The upper parts and the sides of the head are ashy grey, tinged slightly with ochre, the lores a slightly darker ash grey, and the rest of the upper parts brown washed with ochre. The tail-feathers are sepia brown, edged with the same colour as the back, the outermost being white or buffish white with an oblique spot on the inner web near the root. The wing-feathers are also sepia brown, the greater and median coverts being broadly margined with rusty buff. The primaries and greater coverts are sepia brown, narrowly edged with light brown, the bastard wing sepia edged with light brown, and the least wing-coverts brown slightly washed with buff. The throat is pure white,

upper breast and abdomen whitish, the former being tinged with rosy buff, flanks light brown, and the under tail-coverts whitish buff. The under side of the tail is lavender brown, the under side of the wing light ashy brown, and the under wing-coverts and axillaries lavender buff. Both the upper and lower mandible are horn brown at the tip and a yellowish flesh colour at the base, iris light rusty buff, and the feet a buffish flesh colour.

Adult Female.—The plumage is very similar to that of the male, excepting that the head is brown like the back, and the colouring as a whole not quite so pure.

Fledglings.—The upper parts are dull brown, slightly more ashy on the crown and rather more ochre on the cheeks. The tail is greyish brown, each feather being edged with a rusty buff colour, and the outer web on the outermost but one is entirely this colour, while the outermost is buffish white. The wings are sepia brown, the secondaries and their coverts being broadly edged with dull rusty buff. The primaries and their coverts are narrowly edged with the same colour, the outer edge of the large primary being whitish buff. The bastard wing is sepia grey, the outer web on each feather being light rusty buff with a tinge of olive, and the under parts of the wings are ashy grey, the feathers being narrowly edged with pinkish buff. The throat and abdomen are whitish, and the crop, flanks, and under tail-coverts light buffish brown. The upper mandible is a dark greyish flesh colour, and the lower mandible the same at the tip, but light flesh colour at the base with a tinge of lavender. The gape is yellowish with a faint tinge of red, and the tongue the same colour, but rather more red at the base, with two darkish spots near the root. The tarsus is flesh colour with a trace of lavender, toes rather more brownish flesh, and claws dark ash grey with light tips.

Nestlings.—The crown is slate colour, with brownish inconspicuous edges to the feathers. The lores and sides of the face are brownish ash, the same colour extending to the

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nape. The smallest wing-coverts are of the same colour as the sides of the face, and the remainder of the wing-coverts are dark slaty brown, each feather being broadly margined with rusty buff. The tail is greyish brown, each feather being broadly margined with the same colour as the rump, and the outermost feather is whitish buff. The under part of the tail is greyish brown, narrowly edged with light buff. The throat is light ash colour, the crop umber ash, abdomen whitish ash, and the flanks umber buff, the same colour extending to the under tail-coverts. The upper mandible is horn colour, lower light greyish flesh colour, and the iris dusky grey hazel. The feet are brownish flesh colour, and the claws grey.

On leaving the egg the bird is naked, with eyelids completely sealed. The skin is buff colour or reddish buff. At the root of the tongue, which is flesh colour, there are two darkish ash grey spots. The outer edge of the bill and the corner of the mouth are yellow, and the posterior part of the gape dull flesh colour. The feet are almost transparent buff, and the toes and claws much the same colour.

GEOGRAPHICAL DISTRIBUTION.

Throughout **England**, **Wales**, and **Ireland** it is perhaps the most common of the warblers, and even to many parts of **Scotland**, including the Western Isles, it is a common summer visitant, but in the extreme north it becomes less abundant and more local, being a doubtful visitor to Caithness, and a straggler only in the Shetland Islands. To the **Channel Islands** it is a regular summer visitant.

Over the greater part of **Central** and **Southern Europe** the bird is a common breeding species, but in the south of **Italy**, **Sicily**, and **Sardinia** it is not so common. In the central and southern parts of **Sweden** it is also common, but in the more northern parts it becomes rarer, although occurring up to 63° N. lat. In **Finland** it is generally distributed and in many places in the south and west, as far north as Ijo,

BRITISH WARBLERS

on the coast of Uleaborg, it is common; this is especially the case on the Island of Carlo, in the vicinity of Willmanstrand, and on the shores of Lake Ladoga. It also occurs in the neighbourhood of Lake Onega, in the Province of Olonetz, and eastward of this visits the Provinces of Vologda, Viatka, and Perm. In **Poland** and the **Baltic Provinces** the bird is very common, and in fact throughout **Central** and **Southern Russia**, and in the valley of the Volga it is generally distributed. Further east it becomes less plentiful, though occurring in the provinces of Orenburg, the Kirghiz Steppes, and in Astrakhan, and to some extent breeding in the **Caucasus**.

In **Asia Minor** it occurs in summer.

There are records of its occurrence in **Cyprus**, but **Crete** and **Malta** are visited on migration only, and it appears to breed in parts of **Algeria**, **Tripoli**, and **Tunis**.

In winter it visits **North-east**, **Central**, and **West Africa**, as far south as **Damaraland**, and also **Arabia** and **Madeira**.

LIFE-HISTORY.

There is little variation in the dates upon which the first male reaches these islands, or at any rate the Midland Counties, and under ordinary conditions they may be expected between April 19th and 25th, though, if exceptional climatic conditions prevail, the migration may be checked. Such was the case in the year 1908, when a snowstorm of considerable severity occurred about April 25th, with the result that the males did not begin to arrive until April 30th.

In the numbers in which they visit us from year to year they vary considerably, and this variation is in some measure due to a local and temporary influx into certain districts, for it often happens that whereas they may be plentiful in one district, in another one adjoining they may be unusually scarce. It cannot, however, be doubted that there are in addition influences at work outside the British Islands—

WHITETHROAT

dangers attendant on migration, &c.—which materially affect their numbers, causing a certain deficiency universal in some years.

When large numbers of individuals arrive simultaneously, I have often noticed that a considerable proportion of them are immature birds with undeveloped plumage and colour lacking in intensity; and so much is this sometimes the case that it is by no means easy to find a male with the breast suffused with the vinous tint, so prominent a beauty of a really adult bird. The plumage of the males varies; some have much richer colouring and a greater development of feather; this I believe to be largely due to age, but until we have further information with regard to the spring moult it is impossible to say how much this may be the case. The majority of the males upon arrival in this country appear to have only recently completed their moult.

Where plentiful they add considerable charm to the country roads and lanes, which they love to inhabit, for they are generally singing, uttering their peculiar hissing note, or performing a series of aerial dances. Tall and tangled hedgerows, especially by the side of the road, are their favourite resorts; but they are found in various places, such as wooded banks with luxuriant undergrowth, osier beds, gardens, the more open parts of large forests where the timber has recently been felled, and the outskirts of woods and coppices, the only real necessity to them being thick and tangled undergrowth, in which they can quickly conceal themselves and ultimately rear their young. In all such places they are not only very plentiful, but, in contrast with so many wild creatures, make their presence known—in fact, almost intrude themselves upon one by their apparent inquisitiveness.

It often happens that solitary males make their appearance some few days ahead of the general bulk of the species; but they differ somewhat from other migratory species in this, that they do not increase so gradually, but arrive more

suddenly and in large numbers. I do not think that this is due solely to the fact that the species is more plentiful, but that it is more customary for them to migrate in companies. The behaviour of the males on their first arrival rather points to this conclusion, for it is not unusual to see two, or even three, keeping company during the early hours of the first day, one having more the appearance of a leader, although more probably the owner of the immediate surrounding territory, and in that sense only a leader. Thus they travel in search of food amongst the undergrowth and bushes, even on the ground, hidden from view by the Dog's Mercury (*Mercurialis perennis*), but disclosing the direction in which they are moving by shaking the leaves as they pass. Or they wander amongst the fruit trees, examining the swelling buds for *Chironomidæ*. How long they thus keep company it is difficult to say; apparently during a few hours only, for where three could be seen in the morning one only will be found in the evening, and adjoining territories, previously unoccupied, will each possess an owner.

Both sexes are of an excitable disposition, the male more so perhaps than the female, and the result of this is that the period of sexual activity is full of changing scenes, which are difficult to interpret. But the one outstanding feature is the law which obtains among them as to breeding territory, and in the light of this principle some of these scenes seem to me to become more intelligible. For each male has a territory, wherein it seeks its food and ultimately rears its young, the boundaries of which, as I shall presently mention, it occasionally, but only for a short time, crosses.

The migration of the sexes overlaps, but the first female appears after the first male, the time varying with the seasons, according to the early or late arrival of the males. If, that is to say, the males are very late the females may commence to arrive even on the following day, but that is not usual, some days generally intervening. Therefore if two adjoining territories are kept under observation it will be found that,

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whereas the male in the one case may have arrived only a few days before the male in the other, an interval of as much as fourteen days may separate the arrival of the respective females. Now there is little doubt that it is the presence of a female in a certain territory that is one, though not the only, cause which induces the unpaired male in an adjoining territory to cross the boundary. The impulse to approach the female is at this period probably irresistible, and the result is that the owner frequently attacks the intruder by flying at and pecking him vigorously until he leaves, although this does not always happen, for he sometimes takes little or no notice of him. On these occasions the female shows that she, too, is under the influence of considerable excitement, spreading and flirting her tail, and at the same time incessantly uttering her quiet call note. When the one male pursues the other she also accompanies them, flying rapidly in and out of the bushes. I never remember seeing her actually attack an intruding male, but when a second female intrudes she does not hesitate to do so; the attack being very vigorous, and at such times the erection of the feathers and the spreading and the flirting of the tails are in every way similar to what one observes in the case of the males.

It is more difficult to understand what causes an unpaired male to cross its boundary and enter the territory of another single male, yet it is of frequent occurrence. In assuming that all these activities have some direct bearing upon the history of the individual and of the species, we may possibly be in error; but, if this is so, we must still regard them as an expression of some agency at work in the bird's metabolism, and thus they come to have a meaning equally important if we could but fathom it. When an unpaired male thus enters the adjoining territory of another single male a battle—or what frequently has every appearance of a battle—ensues; at one moment so strenuous that there need be no hesitation in pronouncing it as such, but at another less active and more

in the nature of a game. The fighting generally takes place within, comparatively speaking, a very small area. The owner of the territory is the aggressor, and he pursues the intruder, flying round and round in and out of the bushes, never leaving him alone for long, but incessantly attacking, and thus compelling him to move from place to place. Both males sing or warble continuously even as they fly, and when they meet there is considerable pecking and fluttering. As might be expected the attitudes are expressive of great excitement. When settled near one another, or in the same bush, a quivering of the wings is at times noticeable; but during the height of the excitement the feathers on their backs are raised, those on their heads erected, and their tails spread and drooped, or more frequently waved up and down. When less in earnest the attitudes are very similar, although the one male can by no means be said to intrude upon, but only to follow, the other, and at such a time an incessant excited warbling is uttered by both of them in addition to the usual fluffing of the feathers, spreading and waving of the tail. Therefore, it will be seen that, so far as the attitudes are concerned, there is little, if any, difference between the quarrel on the one hand and the companionship on the other, but that there *is* a genuine difference no one after closely observing them would, I think, deny.

The males have periods of frenzied excitement even before the arrival of the females, and I have seen a male commence to construct a nest, adding to it slowly day by day, which, upon the arrival of a female, was completed, and ultimately used for rearing the offspring.

The females begin to arrive about twelve days after the first male, and there is as much variation in their plumage as in that of the males. In some cases it is fully developed and brightly coloured, in others the reverse; but I believe that the brightly coloured females are of less frequent occurrence than the brightly coloured males.

As a rule the male pairs with the first female that enters

WHITETHROAT

its territory, but it is not always so, for two females may arrive in the same territory more or less together, and when this occurs a battle takes place between them. Their method of fighting, and of showing antipathy to one another, is similar to that of the males; but inasmuch as a battle between the females is of much less frequent occurrence than one between the males, it is consequently so much the more interesting to watch. I regard this fact of the females fighting as one of some importance for the principle of breeding territory. The Whitethroat is the only species in which, hitherto, I have seen the females thus fighting, but how easy it would be for a struggle of this kind to escape observation can be readily understood; it is, therefore, probable that the females of other species do, under similar circumstances, give battle to one another.

The fighting is intermittent, severe at one moment, less earnest at another, and is limited to a restricted area. The birds follow one another in the same bush, hopping from branch to branch, one being more of an aggressor than the other. Now and again an attack is delivered, resulting in much fluttering and pecking. During the pauses in the contest, which are frequent, the two combatants sit within a few feet of one another in the same tree, resting quietly or preening their feathers, appearing to be little troubled as to the issue of the contest. Nevertheless, when the fighting is actually in progress, they unmistakably show great excitement by their attitudes, for they fluff out the feathers on their breasts and flanks, raise those on their backs and heads, spread out their tails fully, flirting them as they hop from branch to branch, and all the time utter their call note as they pursue one another.

The behaviour of the male who owns the territory in which the struggle takes place is, under the circumstances, interesting to watch, especially as he exhibits as many signs of excitement as the female. During the contest he hops hurriedly round, waving his outspread tail up and down,

erecting his feathers and singing continuously. When one female temporarily disappears, he immediately commences to pay attention to the remaining one, precipitating himself towards her after his manner, and discontinuing only on the return of the other female. A struggle of this kind sometimes results in the disappearance of both the females, the one having apparently driven the other away, the male being thus left alone unmated for perhaps another ten days.

The period between the time when a female arrives in a territory of a given male, and the time when the first egg is laid is a varying one. Though commonly referred to as the period of courtship, it is probably one of fertilisation and development only. Before finally deciding one way or the other, it is above all things necessary to know when the first act of coition takes place, whether a single act suffices for the fertilisation of all the eggs, or each egg requires separate fertilisation. Now of all this we have little enough knowledge even of our domestic creatures. How, then, can it be expected that we should obtain sufficient evidence to be of value in the case of wild ones? With the larger species it might, by very close study, be possible to obtain this, but as far as the smaller birds, ever moving and flitting from bush to bush, are concerned, it will always remain a difficult matter to acquire the necessary knowledge. Yet without this knowledge a complete understanding of the numerous diverse activities occurring at this period is impossible. But we can still attempt to understand them in part, and in order to do this we must utilise the only other means at our disposal, namely, deduction from the general behaviour of both sexes. And it is just because, speaking generally, there is a gradual diminution of excitement, which would naturally be the result of fertilisation and not an increase, or at any rate a continuity of the excitement, which would result from a prolonged courtship, that I am led to believe that the period *is* one of fertilisation and not of courtship. By copying from my notes a brief description of the behaviour of a pair in the morning

WHITETHROAT

during this period I think I can make my meaning somewhat clearer. The male I refer to arrived on April 30th—the lateness of the date being due to inclement weather—and the female the following day, May 1st.

May 1st.—Female Whitethroat arrived. Male very excited, warbling incessantly and often flying round the female and precipitating himself on to her after his manner. Female spreads her tail and flaps her wings on his approach. Male never leaves her for long, and often, when following her, picks up and carries a piece of dead grass, but he also does this when alone, and has now been carrying some to a honeysuckle bush in which he has finally dropped it.

May 2nd.—Male very excitable, flying at the female and singing as usual. The precipitous flight is of frequent occurrence, and the female once flapped and quivered her wings on his approach. When alone the male carries dead grass to the same place as yesterday. Upon examining this place I found a nest quite formed. Female joined the male while he was building.

May 3rd.—Male not so excited. Female keeps close to him, the one calling to the other as they wander along. There is a frequent quivering of the wings and flirting of the tail on the part of the female. Male was sometimes close to the nest.

May 4th.—Male and female together. The female sometimes follows the male; male sometimes the female. The precipitous flight occasionally takes place. The male is rather more excitable than yesterday.

May 5th.—I could not see the female for some time, but she at last approached the male. Male has been warbling excitedly some distance away from the female. The excitement is not so intense as formerly. I saw no precipitous flight.

May 6th.—Male and female following one another. No very great excitement. The precipitous flight once occurred. Both of them have been collecting dead grass, and the male

flew towards the nest with a piece in his bill, but dropped it when settling near the nest.

May 7th.—Soon after my arrival the male commenced to carry dead grass to an entirely different place from where the nest is built. The female came to him when he called. The male has been away from the female and is now carrying dead grass to yet another place. Not long since the female was in this particular place, remaining there for some time. Male continues to carry dead grass rapidly to this place, but is now precipitating himself upon her. He has again commenced to build, female also sharing in the work. I have examined the second place to which he was carrying dead grass and found the commencement of a nest. In the third place the outer part of the nest is complete.

May 8th.—After watching for some considerable time the female went to the nest. There is no real excitement on the part of either of them, but the male has been singing a little.

May 9th.—Female hard at work building the nest. As she was leaving it the male commenced his precipitous flight.

May 10th.—The pair are quietly feeding close together, male at times singing.

May 11th.—First egg laid.

Thus on the eleventh day and in the third nest the first egg was laid. The period of eleven days in this particular case is a long one, six days being sometimes sufficient for the production of the first egg. The promiscuous building of nests by the male is curious, and explains what previously had been a mystery to me, namely, the number of unfinished nests belonging to this species that one so often finds in proximity to one another, and which are so especially conspicuous in the winter months when the vegetation has decayed. The first nest, which was completely formed except the lining, I have in my possession, but the second nest was not sufficiently formed to allow of removal. The third nest was completely finished, and the actual position of this nest seems



MALE WHITETHROAT
EXCITEDLY BUILDING A NEST PREVIOUS
TO THE ARRIVAL OF A FEMALE

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WHITETHROAT

to have been decided upon by the female, for she remained some considerable time in or about this place before the nest was commenced. It will also be noticed that she in no way helped to construct the first two nests, but only the third one; nevertheless, as I have previously mentioned, it sometimes happens that a nest built by the male prior to the arrival of the female is ultimately utilised for incubation.

The female is at all times less obtrusive than the male, and this is especially the case on her first arrival. Creeping about in the thickest part of the hedgerow, or low down amongst the undergrowth, she travels in one direction, momentarily appearing in the bare spaces, or on the outside of the hedge, but as rapidly disappearing, only to appear again a little further along as she flits to the opposite hedge. She never goes far distant, but keeps working her way back to her original starting-point. The male follows closely in her wake except during his fits of excitement, which are numerous and very intense. So intense does this excitement become that the bird seems almost to lose control of itself, and the actions consequently give one the impression of a creature demented. Such frenzied action, as a result of great excitement, is by no means uncommon in bird-life.

The attitudes assumed by birds during the period of sexual activity are as a rule very beautiful, but there are exceptions, and in some instances they can only be described as ludicrous. Such an one is the Red-backed Shrike (*Lanius collurio*). When perched upon a branch beside the female, he raises his tail, lowers his body, bends his neck downwards, and his bill upwards in a comical, almost imploring, manner. The male Whitethroat is another instance, and his attitudes, especially when he precipitates himself on to the female, are somewhat difficult to describe. It would be doing him an injustice to say that they are wholly devoid of beauty; but they are at least peculiar, except during his aerial dance and his more sober moments when he is quietly following the female, and then they are full of beauty.

He follows, then, closely in her wake as she wanders through the hedgerow, often uttering his peculiar hissing note. But as his excitement increases he appears upon the top of the hedge or the thicket in which he happens to be, and contracting all his feathers, excepting those on his head, which he raises, and on his throat which he swells out, thus giving himself the appearance of a bird with a head too large in proportion to its body, he commences to sing or warble violently. Thus he performs for a short time, then again goes in search of the female, disappearing rapidly into the bushes. After a few moments he again appears, behaving in a similar manner, or displaying his excitement by his aerial dance. This dance is really very pretty, and can often be seen during the summer months. Rising in the air to some height, he spreads out his tail, erects his head feathers, and, while singing, commences his dancing flight, as if suspended on an elastic thread, gradually making his way lower and lower down until he finally darts back again into the hedgerow.

The periods during which in his wild and headlong flight he almost precipitates himself on to the female occur frequently, but only in the moments of his most frenzied excitement. When this takes place the female may be either in the dense undergrowth or in some small bush almost hidden from view, or she may be in a more open position. He settles on a branch a little distance above her, and here for a few moments he will remain watching intently. He contracts all his body feathers, but in striking contrast erects his head feathers, and, almost lying upon the branch in his anxiety to get a glimpse of her below, continuously gives utterance to a quiet purring note. Then suddenly he commences his mad flight. Leaving the branch he precipitates himself towards her, and upon reaching the topmost twigs of the bush or undergrowth swerves upwards, turns in the air, and again darts towards her. Thus he continues for a short time, flying backwards and forwards, singing intermittently. But he does not always turn in the air, for



MALE WHITETHROAT
ATTITUDE ASSUMED DURING ITS AERIAL DANCE

WHITETHROAT

sometimes swerving upwards towards a branch in an opposite tree, he momentarily settles upon it, rapidly turns round, and again precipitates himself towards the same spot, and this he may do a few times in succession, always, however, utilising the same branches in the respective trees to settle upon. The whole performance is most peculiar, and gives him a very clumsy appearance, but being so quickly executed it is difficult to describe. How he prevents a collision is surprising, for he often approaches the female so closely that it seems well-nigh impossible for him to swerve away in time.

This peculiar and characteristic flight is performed not only on the first arrival of a female, but occurs throughout the period of sexual activity, though becoming of less and less frequent occurrence as the days pass by. Instances of it can be seen even as late as the latter part of June, and may be due to a recurrence of sexual activity before a second brood. It does not seem to me probable that the male has any direct motive in thus performing, but his actions and his flight, although belonging to the same category as all other weird movements of the wings and body which are common to many species at this period, are so peculiar that they would well merit further investigation. At the same time they are so uniform throughout the species that it is doubtful whether a male could be found which, under the same appropriate circumstances, did not act in a similar manner. The actions of the female give us little or no clue as to whether the performance is distasteful to her, for they could with as much truth be interpreted as expressions of pleasure or disapproval; yet it is not easy to see what pleasure she can possibly derive from it. The same quiet fluttering of the wings which occurs at other periods is often conspicuous, and when the male actually precipitates himself on to her, she receives him as one would expect her to receive an attack; in fact, her method is very similar to the manner in which she does actually receive the attack when fighting with another female; the tail is spread, wings extended, and as he approaches she

tentatively flies or, rather, springs at him, and sometimes they seem to momentarily hold one another by the beak.

I have seen considerable commotion caused by a male Blackcap which, occupying the same territory as a Whitethroat, happened to be paying attention to a female at the same time. Whilst the males were thus pursuing their respective females the four birds often encountered one another in the same bush. Whenever this occurred the male Blackcap exhibited every sign of anger, flying at and vigorously attacking the male Whitethroat, who, as regards strength, was by no means a match for him; and not content only with this attack he would, in his excitement, often imitate the Whitethroat's song.

Assemblies of five or more excited individuals are not of infrequent occurrence, and are very similar to those which we find amongst the Blackcaps. They are not limited to any one sex, but may consist of two females and three males, or two males and two females. The males warble, the females utter their call note, and both sexes show the usual signs of excitement by spreading and waving their tails and erecting their feathers, and although they never go very far distant, but remain more or less in the same locality, yet they move rapidly from tree to tree or along the hedgerows.

The nest is placed in thick undergrowth of some kind, either in the lower parts of tangled hedgerows or in clumps of bramble overgrown with coarse grass, or sometimes in the thick vegetation that grows so luxuriantly in the drier portions of osier beds, no partiality being shown for any one particular herbage. It is usually placed from six inches to three feet from the ground, and is a rather deep but lightly built structure, composed principally of dead grass. But like the nests of many other species the grasses placed at the base are coarser than those used in the interior; wool and pieces of dead thistle are often mixed with the grass, and I have found one nest in which a considerable quantity of cotton-wool had been utilised. The lining, which is of slight thickness, is of horsehair.



FEMALE WHITETHROAT
ATTITUDE ASSUMED WHEN
FIGHTING WITH ANOTHER FEMALE

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WHITETHROAT

One egg is laid every twenty-four hours, either during the night or the very early hours of the morning, until the full number, which is usually five, is completed. Incubation lasts from ten to fifteen days.

When the young are hatched the parents become very nervous, and this is especially the case if the nest is approached or any attempt made to watch their movements. I have sometimes found it necessary to wait for fully two hours before they would commence to feed their offspring. Owing to this nervousness they perch upon the branches close at hand, and if they notice any movement either retire with a flit of the tail into the foliage, flutter close to and round one's head or even expostulate openly, swelling out their throats and uttering their quiet alarm note.

The parent birds share the duties of tending the young, and both exhibit very strongly all the peculiar characteristics of the species. The male is perhaps the more timid, although the difference, if any, is slight. They creep up to the nest and settle upon the side of it, but even then their courage often fails, and after remaining motionless for a few seconds quietly retire. When in this hesitating mood they often swallow the food they are holding, tired, perhaps, of carrying it about for so long, yet hurriedly going in search of more, and in a few moments returning with a fresh supply. It seems almost as if this unnatural check to the proper carrying out of their routine of instinctive activities made them uneasy; nevertheless, like the hive-bee, they appear to be compelled to follow an invariable order of work. During the first week after the young are hatched the greater part of the parents' time is passed in brooding. They bring a small supply of food, and one of them then settles down upon the nest for a short period, varying from ten to twenty minutes, and when thus brooding the female will leave the nest in response to a note from the male, or the reverse may be the case. The young are not fed in any succession, one particular bird, in fact, often receiving food from both

parents, but they respond in accordance with their hunger, and if, when one of the parents settles upon the side of the nest, there is no response, that parent at once commences to brood. I remember once seeing a male, while searching for food not far from my hiding-place, suddenly spread out his wings and commence to run about in what might almost be interpreted as a threatening manner. Such behaviour is not uncommon on the part of the female when a nest containing young is approached; she will then proceed to flutter off and move away along the ground, waving her wings and spreading her tail, or she will perform in the same way amongst the trees, and whilst hopping from branch to branch will spread her tail and wave her wings slowly in a similar manner to that observed during the period of sexual activity; she will not, however, always act thus, but for no apparent reason will perform differently at even very short intervals.

As in the case of many other species, the fæces ejected by the young are enclosed in a membraneous sac, and by this provision of Nature the parents are enabled to carry it in their bills, and either remove it some distance from the nest, or else swallow it themselves.

While cutting away vegetation surrounding a particular nest, so as to obtain a better view of the proceedings, some small leaves of the ground ivy (*Nepeta glechoma*) dropped by mistake, and unknown to me, into the nest itself. Soon after I had returned to my hiding-place the male appeared carrying some larvæ in his bill, and settling upon the side of the nest placed the food into a young one's throat; but immediately took it out again, and after some hesitation swallowed it. Proceeding then as usual to clean the nest he picked up one of the leaves, and to my astonishment swallowed it also. This led to my making further experiments, not only with this particular pair of birds but with others also. I placed leaves of various sizes, and from different plants, into the nest; and the result of the experi-

WHITETHROAT

ment was this, that the leaf was often removed and dropped some distance away from the nest, but not infrequently swallowed. Both male and female acted precisely in the same way.

Here, then, by a happy chance, an incident occurs which seems to momentarily lift the veil so completely shrouding the subjective states of the lower animals. We can well understand how necessary it must be for the welfare of the offspring that the nest should be uncontaminated by the excrement, and in many cases Nature has provided means whereby this end can be attained. In those instances in which the nest is enclosed, or lightly and loosely built of dead vegetation, it is even more essential that the means should be in every way adequate; and we find, as a rule, that this is the case, for the fæces are enclosed in this membraneous sac, which the parents are thus enabled to remove in their entirety. But amongst other species, where the complete cleanliness of the nest is not of so great importance, the young are themselves able to eject the fæces over the side of the nest. We therefore see at work a series of activities which, combined, result in a perfect system of cleanliness; the parent bird brings food and delivers it into the gape of a young one, it then waits for the fæces to be ejected, and if this is not done administers a slight tap with its bill on the anus, which is sufficient to produce the desired result. It then carefully lifts the membraneous sac, and, flying away, drops it some distance from the nest.

There can be little doubt that the whole procedure is congenital, for how, otherwise, should a young one know how to respond to the touch of the parent's bill? or how could the parents know what, under the circumstances, was necessary? In neither case could it have been learnt by tradition.

The system is perfect, and we can recognise the need of removal, but it is not so easy to understand what useful purpose is served by the swallowing of the excrement; the removal

by carrying being equally as effective, and, in fact, more often resorted to. Nevertheless, no one could watch the vigorous efforts of a bird vainly endeavouring to swallow a leaf too large to pass down its gullet without concluding that it was not due to any desire on its part to do so, but that its whole behaviour was congenital, and that the instinctive procedure being thus interrupted accounted for the extreme bewilderment its attitude denoted, for you may see it arrive at the nest, deliver the food to the young, pick up a leaf and attempt to swallow it, then drop it and yet again pick it up, finally after a pause flying away; in a few moments it returns again with food, delivers it to the young, and again goes through the same performance with the leaf.

In whatever way we may regard such an episode, the truth of which anyone can test for themselves, it cannot be denied that the fact of a member of an insectivorous species attempting to swallow a bramble leaf, and that by no means a small one, is significant.

From yet another point of view the experiment with the leaf is interesting. It shows—at least I am inclined to believe so—that the bird has no knowledge of the relation between the means employed and the end attained; and it is just such an incident as this that increases my doubt as to whether intelligent modification has been that factor in the evolution of instinct which it is so often claimed to have been, for if such a combination of activities as we are here discussing had arisen by this means, assuredly the intelligence ought not to be of so low a degree as would be incapable of distinguishing between a leaf and a membranous sac of excrement.

I once witnessed a scene with a pair of these birds which was interesting. Finding one evening a nest, in which the young were just hatched, placed in such a position that it could be watched with little difficulty, I determined to remove some of the vegetation surrounding it at once, so that the parents might have ample time to become accustomed to the change by the following morning. This I did, and returned

at daybreak. Arriving at my hiding-place, I noticed that something unusual had happened to the nest, and upon examination found that it was very much tilted on one side. In removing the vegetation the previous evening I had carelessly cut away one of the supports, with the result that the weight of the parent bird brooding had brought about a tragedy. I did not then notice that the young were in a state of collapse, so placing some small leaves in the nest as an experiment, I returned to my hiding-place to await the result. As a rule the parents exhibit great anxiety when the nest is in any way interfered with, or even approached, but what impressed me in the present instance was a complete absence of any such excitement. The female arrived with food and gave it to a young one; she then picked up and dropped some of the leaves, but finally left them alone. After a short time the male arrived, fed one young one and carried away a leaf after making some attempt to swallow it. Then followed a long pause, but at last the male returned with food, and settling upon the side of the nest attempted for some considerable time to make the young respond, but without effect. Closer examination then revealed the fact that the young were quite cold and in a state of collapse; and all, in fact, with one exception succumbed while I was still there watching them. The parents now disappeared altogether, but next morning the female was again brooding, and the one young bird had completely recovered, although the dead bodies had not been removed. Returning to the nest a few days afterwards, I found that the birds had deserted and left the solitary offspring to its fate.

Throughout this episode the complete absence of excitement on the part of the parents was remarkable; it seemed as if their anxiety was solely proportionate to the responsiveness of their offspring. For if such an emotion as affection had been present, in no matter how rudimentary a phase of development, it would have revealed itself by an increase, rather than by a decrease, of anxiety with the gradual collapse

of the young. No mistake, however, could be made with regard to their attitude in this instance, since it was one of absolute neglect, no anxiety being shown at my presence, no desire to attend to, or even approach, the young. Previous to the last attempt which the male had made to distribute food, the female behaved in rather an unusual manner; the male, whilst quietly uttering his call note, approached her, upon which she spread her wings and began to wave them slowly up and down. Such an attitude is indicative of a desire for coition, the commencement, in fact, of a second brood, although, be it remembered, the young were not then dead. From this we can only infer that with the absence of a proper response on the part of the young, the parental instinct disappears.

Until the first plumage is complete the young remain with their parents, and three or four can often be seen fluffing out their feathers in the sun, while perched close to one another in a row on the top of some thick bush, into which, upon the female uttering her quiet alarm note, they dive headlong with a flirt of the tail and rapidly disappear. Even after parental care has ceased to be a necessity they continue together in a family party, roaming about the fields and hedgerows in search of food. As the weeks pass by they gradually disperse, and begin to desert their native haunts, migrating towards the end of August and throughout September, some remaining as late as October.

The song, although by no means a highly developed performance, possesses a peculiar charm, which is no doubt enhanced by the lively actions of the bird while singing. The male continues in song, though with less and less vigour, and longer periods of silence, until the end of June. Two points about the song are worthy of mention; firstly, the deterioration as the season advances, and secondly, the variation in different districts. With regard to the first of these, it only remains for me to say that I believe the explanation given of a similar peculiarity in the song of the Blackcap holds good in the present instance; and with regard to the



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WHITETHROAT

second, which is a difficult and complex problem, I shall have somewhat to say in the life of the Lesser Whitethroat.

Apart from the actual song, there are numerous call notes, the most peculiar one being the soft hissing sound, with which everyone who has walked along a country lane in summer must be familiar. Of the others, the most noticeable is the one both sexes are accustomed to utter rapidly when excited, a high-pitched and very harsh note.

The power of imitation, although not great, is well marked, and is principally in evidence during periods of great excitement, notes of the Blackcap and Chaffinch being intermingled with the true song.

Their food is principally insects, *Chironomidæ* forming a large part of their diet early in the season, but larvæ, especially of *Chimatobia brumata* and *Tortrix viridana*, are taken in large numbers.

In the autumn they frequent the elder bushes and feed upon the berries.



LESSER WHITETHROAT.

Curruca sylvicola, *Hewitson, British Oology*, 1st Ed., vol. i, pl. 42, fig. 4 (egg), 1833; *id. Eggs of British Birds*, 2nd Ed., vol. i, p. 98, pl. 27, fig. 4 (egg), 1846; *Booth, Rough Notes*, vol. ii, p. 55, 1883.

Curruca garrula, *Meyer, British Birds*, folio Ed., vol. i (coloured plate figuring adult male and egg) [1835-43].

Sylvia garrula, *Macgillivray, British Birds*, vol. ii, pp. 357-360, 1839.

Sylvia curruca, *Hewitson, Eggs of British Birds*, 3rd Ed., vol. i, p. 132, pl. 35, fig. 4 (egg), 1854; *Gould, Birds of Great Britain*, vol. ii, 2 pp, pl. 58 (coloured figure of adult male and female), 1865; *Yarrell, British Birds*, 4th Ed., vol. i, edited by Newton, pp. 410-413 (woodcut), 1873; *Dresser, Birds of Europe*, pp. 383-388, pl. 58, (coloured figure of adult male), 1876; *Seebohm, British Birds*, vol. i, pp. 410-413, pl. 10, fig. 6 (egg), 1883; *Lilford, Coloured Figures*, vol. iii, p. 52, pl. 26 (coloured figure of adult male), 1885; *Saunders, Manual of British Birds*, 2nd Ed., pp. 43-44 (woodcut), 1897.

Croatian, *Grmusa Sivoperke*; Danish, *Gjærde-Sanger*; Dutch, *Braamsluiper*; French, *Bec-fin babillard*; German, *Zaun-Grasmücke*; Hungarian, *Szurke posyata*; Italian, *Bigiarella*; Norwegian, *Graesmutte*; Swedish, *Artsangare*; Russian, *Peresmeshka*.

DESCRIPTION OF THE PLUMAGE.

Adult Male in Spring.—The upper parts are brownish grey, but the crown is more ashy grey, the lores and sides of the head being of the same colour, but darker. The wings and tail-feathers are brownish grey, the innermost secondaries being broadly and the primaries narrowly edged with the same colour as the back, and the bastard wing is slaty brown. The rump and upper tail-coverts are brownish grey, slightly lighter than the back, and the tail-feathers are edged with the same colour, the outermost being whitish with an oblique smoke-coloured spot on the inner web. The under parts are whitish, pure white on the throat, faintly washed with pinkish buff on the upper breast, and light buffish brown on the flanks.

The under tail-coverts are white, under part of the wing greyish brown, and the axillaries the same colour. Upper mandible is dark bluish grey, whereas the lower is light bluish grey at the base, and the iris is light brown. Feet are a uniform leaden bluish grey.

Adult Female.—The colouring is similar to that of the male, but not so intense.

Adult Male in Autumn.—The crown and ear-coverts are grey, faintly washed with brown, the latter being slightly darker and more slate colour. The feathers round the eye are white, and are more conspicuous on the lower eyelid. There is a superciliary stripe, but not a very conspicuous one, and the lores are the same colour as the ear-coverts. The under parts are white, the crop being faintly washed with pale buff and lavender pink, and the flanks are of the same colour. The under tail-coverts are whitish grey, and the under parts of the tail greyish brown, the outer tail-feathers being lighter and whitish on the outer edge. The shafts are white. The upper part of the tail is a warm brown colour, but a little more buff on the upper tail-coverts. The tail-feathers are dark olive brown, and the wing-feathers are the same colour, the under parts of the wing being grey, edged with light buff. The iris is light flesh brown, feet lead or blue, and the soles and claws much the same colour, but somewhat darker. The anterior end of both mandibles is dark grey, the remainder of the upper mandible being whitish grey, and of the lower light bluish grey with a shade of flesh colour.

Fledglings.—The upper parts and ear-coverts are uniform dull ashy brown. In other respects they resemble the adults, excepting that the colour of the iris and feet is duller.

On leaving the egg the bird is naked, with eyelids sealed. The feather-tracts and the eyelids are ash grey. The bill is horn colour and the corner of the mouth light yellow. The tongue is flesh colour with two darkish spots, and the inside of the mouth orange buff. The tarsus is lilac flesh, and the toes the same colour, but rather lighter.

GEOGRAPHICAL DISTRIBUTION.

Throughout the Southern, Eastern and Midland Counties it is generally distributed and in parts of the home counties common, especially in Surrey, but westward it becomes scarce, and appears to visit Cornwall and the **Scilly Islands** on the autumn migration only. In the eastern parts of **Wales** it is by no means uncommon, but rare in the west, being confined in Carnarvonshire to the Conway Valley. In the lowlands of Brecknockshire and Montgomery it is sparingly distributed. To Cheshire, Lancashire and Yorkshire it is a common summer visitant, but north of this it becomes scarce. Crossing the border we find it rare, though occurring in some of the southern and western counties. In the northern counties it is very rare, solitary instances only of its occurrence being recorded, except on migration, when it is a frequent visitor to Fair Island and an occasional one to some of the Western Isles.

From **Ireland** there are only two records, both during the autumn migration, one from Inistrahull Lighthouse and the other from Tearaght Light.

To the **Channel Islands** it is a regular, but by no means common summer visitor.

Throughout the greater part of **Spain** it appears to occur on passage only, and has not yet been found breeding even in districts north of the Cantabrian Mountains. Whether it has occurred in **Portugal** is doubtful.

In **France** it is generally distributed, and the same may be said of **Holland**, where it is common, and **Germany**, except in parts of Bavaria and Brandenburg, where it seems to be somewhat scarce. North of this we find it common in the eastern parts of **Denmark**, but not so numerous in Jutland, fairly abundant in the lower lying districts of **Norway**, and common in the central and southern provinces of **Sweden**, occurring up to 64° N. lat.

In **Italy** we find it in the northern parts only, but in **Switzerland** it appears to be generally distributed, though not

so common as the Whitethroat. In many of the southern parts of Europe it is scarce, **Greece** and **Corfu** being only visited on rare occasions. In **Montenegro** it appears to be rather more numerous, especially in the higher mountainous regions, and in **Bulgaria** it occurs on the islands in the Danube and near Kasanluk and Tirnova.

To many parts of the **Austro-Hungarian Monarchy** it is a common visitor, and the same may be said of the **Russian Empire**. In **Finland** it is generally distributed, but more numerous in the southern parts, occurring as far north as Ijo. In the provinces bordering Finland it is scarce, but has been found in Olonetz and Archangel. Eastward of this it occurs in some numbers in the Province of Perm.

To **Poland** it is a common visitor except in the Province of Lublin, but in the Baltic Provinces it is not so numerous, and the same may be said of the Provinces of Novgorod, Pskov, Tver, and Jaroslav. In the Provinces of Moscow and Tula and in the district lying between the Rivers Oka and Volga it is again somewhat numerous. East of this it occurs sparingly in the Province of Kazan, but again becomes numerous in Orenburg. Whether it visits the Kirghiz Steppes seems doubtful, but on migration it occurs in Astrakhan. In the southern parts it is not plentiful, but visits the Provinces of Kiev and Khardov and has been found near Odessa.

To the **Caucasus** it is not an uncommon visitor, especially in the neighbourhood of Tiflis, Terek, Kuba, the eastern parts of Daghestan, and near Lenkoran.

There are records of its occurrence in **Turkestan**, the valley of the Yenisei, on the Persian Gulf, and it breeds commonly in Palestine.

In winter we find it principally in the northern and north-eastern parts of **Africa**, but not as far south as the White-throat; **Arabia** and **Persia** are also visited at this season of the year.

LIFE-HISTORY.

In contrast to the Whitethroat there is considerable variation in the dates upon which the first males reach

LESSER WHITETHROAT

the Midland counties. The last week in April is the usual time, my earliest record being April 18th, but in a cold and unfavourable season their advent may be delayed as late as the second week in May. They arrive during the night or in the early hours of the morning, and when the latter is the case, solitary individuals can sometimes be seen about 6 o'clock travelling from tree to tree, searching for food as they wend their way along, always moving in one direction.

Although they are so closely related to the Whitethroat, no one could help noticing a very remarkable difference between the two species. True it is that they inhabit hedgerows and feed upon similar food, but the small peculiarities, the sum total of which form a character, are very distinct in the two birds. Both are active, but the superabundance of vigour, so prominent at periods of excitement in the life of the Whitethroat, is not so pronounced in this species.

The male, when in perfect plumage, is very neat in appearance, the contrast between the grey and the white being especially striking; but such males are by no means common in the spring, the majority being duller in appearance. Hedgerows, gardens, the outskirts of small plantations and orchards are their favourite resorts, and although they visit this country in varying numbers from year to year, yet I have never found them so plentiful as other members of the genus. When the first males arrive they are very restless, travelling along the tops of such trees as elms, or amongst the fruit trees in orchards, to which they are very partial, wandering from tree to tree in search of the *Chironomidæ*, halting only occasionally to sing. In this way they travel rapidly through the orchards and hedgerows, apparently in one direction, but in reality they do not leave a certain district, although the extent of land over which they wander is large. Now in this peculiarity—namely, their liking for tall trees and the large area over which they wander when they first arrive—they differ from the Whitethroat, and this characteristic is more interesting because, upon the arrival

of the female, it becomes less pronounced. It is not uncommon to see a male fly high in the air from the top of one tree to the top of another several hundred yards distant, and thence to another, finally returning to his starting-point.

Since they are not very plentiful, a struggle between the males for some particular breeding territory is not of so frequent occurrence as is the case with many other species, but if two arrive simultaneously in the same place a quarrel ensues. Under such circumstances I have never seen them actually fighting, but their excitement is very great, and they scold one another very vigorously, relaxing and fluffing out their feathers, spreading their tails, and, after the manner of other members of the genus, warbling and imitating other species.

When, some little time after the first male, the female does arrive, the male becomes intensely excited, showing it both in his actions and song, but she pursues her way in the undergrowth or in the bottom of a hedgerow, in search of food, regardless of his attentions. He follows her closely, creeping in and out of the hedge behind, at one moment appearing on the top, then disappearing, or in an excitable way flying up into some tree close at hand, singing, warbling, or incessantly uttering his quiet hissing note. If she leaves the undergrowth and travels along the top of the hedge, or in some such visible position, he flies towards her with a peculiar flight, which is more of a flutter than the slow flapping flight of many other species, and although his excitement is clearly intense throughout all these proceedings, it does not reach its limit until he thus approaches her very closely. Following in her wake he throws out his breast feathers, spreads his tail, and erects the feathers on his head, and when in a more open position spreads out and flaps his wings, appearing to tumble about in an helpless condition. During this period of excitement the customary piece of dead grass is searched for, picked up, and finally



MALE LESSER WHITETHROAT

ATTITUDE ASSUMED DURING THE
PERIOD OF SEXUAL ACTIVITY

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LESSER WHITETHROAT

carried as he flutters from one dead stem of vegetation to another.

When pairing has taken place the male confines himself to a limited part of the area over which he had previously been accustomed to wander, and the nest is then commenced, both sexes sharing in its construction. The excitement which was so prominent on the first arrival of the female gradually disappears, but at intervals, which I believe to be just previous to coition, it again becomes very marked. Facing one another on opposite branches they utter their harsh, scolding note and flutter their wings, or the male, while pursuing the female, seizes her and together they flutter to the ground.

The nest, placed as a rule a few feet from the ground in thick hedgerows, small holly bushes or brambles, is lightly and loosely built, principally of dead grass mixed with pieces of thistle or wool. The coarse grasses are placed on the outside, but more slender pieces of dead vegetation are used towards the interior, the lining being of horsehair and fine roots. Five eggs are usually laid.

The young are hatched about the second week in June, and the male shares with the female the task of tending them. Both sexes are inclined to be rather shy whilst performing their parental duties, but I have failed to notice any appreciable difference in this respect in the character of the sexes. Whilst carrying food, a note, which is somewhat different in the two sexes, is frequently uttered, the male's being a soft hissing note, but the female's rather harsher. After having actually delivered the food to the young they utter their note very hurriedly as if alarmed at what they had done. The fæces, enclosed in the usual membraneous sac, are carried some distance away from the nest.

If the young, especially after having left the nest, are approached suddenly or otherwise interfered with, the parents become intensely excited. This can easily be tested by

placing a young one upon the hand, which will generally be sufficient to cause it to utter its alarm note. The female will then settle upon a branch near, and falling from thence in a helpless manner on to the ground will proceed to run about, with her wings and tail outspread to the fullest extent, and the feathers all over her body relaxed; the call note at the same time being rapidly and continuously uttered. Her whole demeanour is one of abject misery, although the attitude assumed is one of great beauty, and is similar in almost every respect to the actions of the male during the period of sexual activity. The performance will be repeated so long as the offspring continues to attract attention.

In this manner many species apparently simulate the actions of a wounded or injured bird in order to entice an intruder away from their young or their eggs. I have personally witnessed many such cases in addition to this one described, and have not hesitated in the past to attribute them to the same cause. But investigations, pursued with the object of observing the effects of excitement when produced by various causes upon the same species, have led me to examine the whole evidence afresh, with the result that I am now inclined to doubt this interpretation.

Both sexes of the Blackcap, when the young are interfered with, appear to reach the utmost limit of excitement, fluttering and running about the ground. The Partridge (*Perdix cinerea*), when her offspring are suddenly approached, becomes frantic with excitement. Spreading out her tail, she raises the feathers on her back, and in a crouching attitude runs rapidly about with drooping wings, uttering her note piteously. If the Reed Bunting (*Emberiza schæniclus*) is startled while on her nest, she acts in a similar manner, running about amongst the thick tangled undergrowth with her tail outspread and all her feathers relaxed. The Wild Duck (*Anas boschas*), when anxious about her young, sometimes flaps along the water or the ground, and even hobbles in an apparently helpless condition. But she does not always do



LESSER WHITE-THROAT
ATTITUDE ASSUMED WHEN
THE YOUNG ARE HANDLED

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so, her natural impulse being to remain motionless, concealed, if possible, by rushes or vegetation of some description. It is when she is surprised or suddenly alarmed that her excitement becomes so great. I have remained quietly within a few feet of her by the side of a dyke, while her young swam hurriedly away, and no alarm was exhibited until some sudden movement was purposely made on my part, when she would flutter away, behaving in the usual manner, her legs appearing to have lost their strength, a result, I believe, often brought about by loss of balance owing to her haste and attempts to utilise legs and wings at the same time. The behaviour of the Avocet (*Recurvirostra avocetta*) is interesting, partly on account of the extreme beauty of the bird, but principally because of the numerous and peculiar attitudes that are assumed. Their breeding in colonies adds much to the interest, since it is not one but often a number of individuals that perform at the same time.

As the nests are approached the excitement of the different members of the colony becomes intense, the pretty cry is uttered continuously, and the individuals whose nests are threatened settle on the ground, expand their wings in a semi-circle, spread and lower their tails, lower their heads, and with their back feathers raised move hurriedly along the ground. Then lying quietly for a few moments with wings expanded they will, perhaps, rise to some height in the air and swoop down at the intruder. Thus they have approached within a foot of my head. Again coming towards the ground, they will settle and run rapidly about with their wings raised over their backs, or in a crouching attitude with wings carried loosely, tail fully expanded, and back feathers raised, will move about more slowly. When they spread their wings over their backs they sometimes raise and lower them alternately, thus appearing to sway from side to side. At other times they remain motionless with wings expanded horizontally either in deep or shallow water; in fact, it is difficult to imagine any possible position of the wings which is not at one moment or another assumed.

The behaviour of the Kentish Plover (*Ægialitis cantiana*) is in many ways similar to that of the Avocet, the same outspreading of the tail and wings, raising of the feathers on the back, and lowering of the head; but this species more frequently remains in one place lying upon the ground, rapidly flapping its wings and at the same time uttering a peculiar buzzing sound. It also expands its wings alternately, a feature of the behaviour at this period, which I have not seen so marked in the case of the Avocet. The Reeve (*Machetes pugnax*) also becomes very much excited when her young are approached. Settling on the ground, she runs rapidly about in a crouching attitude with her wings drooping, tail expanded and lowered, the feathers on her back raised and her head lowered, and from time to time she makes peculiar little springs into the air, which I imagine must be somewhat similar to those of the males when fighting. The Teal (*Querquedula crecca*) disturbed during incubation flutters off the nest and along the ground for some considerable distance. Many instances of the same kind could be given, but I believe that much exaggeration has arisen through the indiscriminate use of the terms "injured," or "wounded," and would have been avoided if the actions had been simply designated as helpless.

Looked at from the point of view of the intellectualist, which is to assume that the bird has some knowledge of the relation between the means employed and the ends attained, the question is beset with difficulties; for not only must a process of essentially human ratiocination be ascribed to the bird, but it must also be credited with some considerable knowledge of mental states other than its own; it might, in fact, with some truth be said that as great a knowledge is implied in this direction as has hitherto been vouchsafed to man. Such a contingency is beyond the range of probability and need not be further discussed. But if it be still thought that the object of these activities is to entice an intruder away from the nest, then there is only one explanation open to us—

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namely, that supplied by fortuitous variation and selection; and in order that this may have been effectual, it must be taken for granted that any one given species has suffered constant persecution at the hands of some natural enemy or enemies. What the enemies are, which have been so misled by these proceedings that advantage has accrued to the individuals thus practising them, I find it difficult to imagine. It surely cannot be thought that the human element has been a factor; for consider, in the case of a little Warbler, how immense a period of time would be necessary, and how constant the persecution must have been before selection could have completed its task, and the variation have become fixed, and finally established as an instinct uniform throughout the species. Nor, after carefully surveying the life-history of the species in which the habit is prevalent, is it more satisfactory to regard carnivorous quadrupeds as the principal factor; yet it is to them that the selectionist must look. At the same time we must bear in mind the past history of the species, the enormous periods of time, and the possibility of the habit having been formed at some very early date when the conditions of existence were more strenuous, and enemies more numerous, but even if we grant all this imperfection of our knowledge, it is but a frail foundation upon which to raise a theory.

Let us look at the facts more closely. I have described a number of cases in which—and this no doubt is true of every case of the same kind—similar stimulating circumstances produce similar results, and in whatever way we may regard any one particular case, this much must be granted, that no distinction is scientifically possible between the behaviour of the Avocet on the one hand, and that of the Lesser White-throat on the other; we cannot, that is to say, point to the apparently injured leg or wing of the Avocet, and, because it thus approaches more nearly our conception of a wounded bird, proceed to argue that therefore its behaviour is different in kind, and capable of a different explanation from that of the

Lesser Whitethroat, which, though having a helpless appearance, does not exhibit so marked a sign of a disabled limb. And if we are thus far agreed, our next step is to enquire whether any distinction can be drawn between these activities as a whole, and those which characterise the behaviour of a bird at other periods of excitement.

Now I submit that this is an important point to decide, for it appears to me that the functional similarity is so marked as to warrant the belief that all the activities, occurring at different periods of excitement, can be referred to a common origin. If the movements of any of the more demonstrative species such as the Avocet, Reeve, or Kentish Plover, when their young are approached, are analysed, it will be found that all the curious ways in which the limbs and feathers are made use of, the flapping of the wings, spreading of the tail, raising of the back feathers, lying on the ground, &c., have their counterpart in the actions of various species during the period of sexual activity. Even the alternate expanding of the wings of the Kentish Plover, which at once arrests attention on account of the peculiar nature of the movement, is not confined solely to this period of excitement, the female Marsh Warbler (*Acrocephalus palustris*) behaving similarly during sexual excitation. No better instance of this striking similarity could, I think, be found than in the actions of the Reeve when her young are approached on the one hand, and those of the male Pied Wagtail during sexual excitation on the other. Both these birds, at the respective periods of excitement, raise the feathers on their backs, lower their heads, lower and spread their tails, and in a crouching attitude with drooping wings run about the ground. Anyone, in fact, who studies the Grasshopper Warbler, or Savi's Warbler, or any of the more demonstrative species, during the period of sexual activity, cannot fail to notice, whenever the excitement reaches a certain degree of intensity, how great a similarity the resultant activities bear to those which occur amongst many species during the period in which the parental instinct is uppermost.

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Let me describe the behaviour of certain species when the sexual instinct is uppermost. Savi's Warbler, with outspread wings and tail, tumbles rather than climbs down the stem of the *Arundo phragmites*, and, upon reaching the mass of dead reeds at the bottom, follows, while slowly flapping its wings, in the wake of the female. The Rook (*Corvus frugilegus*), lying upon the ground, expands its wings and flaps them slowly in a helpless manner. The Cormorant (*Phalacrocorax graculus*), while lying upon a rock, behaves similarly to the Rook; extending its wings, it flaps them slowly, at the same time raising its outspread tail almost at right angles to its body. Numerous instances could be given showing that it is only necessary for circumstances of a sufficiently stimulating nature to arise in order that the corresponding activities should be produced, and in all such cases it is impossible not to be impressed with the very helpless appearance of the bird; it would, in fact, in some instances, be as easy, if not more so, to imagine the whole behaviour an act of simulation, than many of the cases which are unhesitatingly referred to that cause.

Now to all of this an objection may be raised on the ground that the one link necessary to complete the chain of evidence is missing—namely, that in no single instance is the same species mentioned as behaving in a similar manner, not only at the period in which the parental instinct is dominant, but also at other periods of excitement; and, while fully admitting the validity of such an objection, I shall reply to it as follows: Firstly, that if it could be shown that all the species, or even a considerable proportion of them, that behaved in the manner referred to when the nest was approached, behaved in the same way at other periods of excitement, if, for instance, the Avocet flapped its wings in a similarly helpless manner at the period of sexual activity, it would constitute proof, and, moreover, proof of a most conclusive kind, that the behaviour *per se* had no special part to fulfil. Secondly, that we are not wholly at a loss for the evidence that is

required, as a study of the life of the two Whitethroats will reveal; for the male Lesser Whitethroat spreads out its wings and tail in presence of the female in the same way as the female when anxious about her progeny, and the behaviour of the female Whitethroat, when her nest is intruded upon, is identical with her behaviour sometimes when in the presence of the male. And it can by no means be said that, in either of these two cases, there is any difference, so far as the attitudes assumed are concerned, at one moment from that at another; in this respect only is any difference observable, that whereas at the period of sexual activity the flapping of the wings takes place while the bird is in the bushes, but not actually on, although frequently close to, the ground, at the period of parental care it occurs for the most part when the bird is actually on the ground. But assuredly the difference between a spreading and waving of the wings upon the ground, and a similar spreading and waving a few feet above it, can never be pointed to as one of sufficient importance to form the basis of an entirely novel explanation. These facts, taken from the lives of two species only, are clearly insufficient, where so large a number of species are involved, until supplemented by others of a similar nature; and although I attach considerable significance to them, yet it is not on them alone that my conclusions are based. Rather do I look to the absence of evidence in support of the simulation theory on the one hand, and the functional similarity on the other, as furnishing the more important considerations. For since the activities, occurring at different periods of excitement, resemble one another to so large an extent throughout bird life in general, it is probable *a priori* that they have but one common origin. Therefore, until considerations of an *a posteriori* kind are supplied, tending to show that there is some difference in kind between those which occur during the period in which the parental instinct is uppermost, and those which occur at other periods, making it virtually impossible that they can

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have one common explanation, it would, in my opinion, be more in keeping with our present knowledge of the facts to regard them solely as an expression of varying emotional states.

Towards the end of July both young and old unite with the small flocks of Willow Warblers, Whitethroats, and Chiffchaffs, which roam about the hedgerows and small fields of potatoes. Both sexes have at this time a very dilapidated appearance, due to moulting, which commences about the second week in this month and extends throughout the greater part of August. As this moulting period proceeds, their vitality seems to increase, and when it is completed and the plumage again fully developed, they become exceedingly playful and lively.

As in the case of the Blackcaps, there is no better place to study them, during the last few weeks before they leave this country, than among the elder bushes. Here they come in search of food, and here they have full scope for their exuberant spirits. At this time of year they are far more noisy than during the early spring or summer, not that they sing, for any attempt they make in this direction has little or no resemblance to their true song, but that they are frequently uttering their call note, which is harsher than the one used in the spring, and bears so much resemblance to the corresponding note of the Blackcap at this period that it is sometimes most difficult to distinguish between them. The elder bushes during the first few hours of daylight are often full of them, together with Blackcaps, and thus there is frequently considerable commotion. The Blackcaps appear to be afraid of their pugnacity, and more often than not retire from their presence, which is not to be wondered at when one sees the rapid manner in which they dart in and out of the bushes, and the threatening attitude they assume. It is difficult to tell, from time to time, whether love of play or pugnacity is really the cause; I am inclined to think the former, for they

sometimes sit opposite to one another and bow in rather a curious manner, the feathers on their heads being erected and their tails outspread. One will suddenly commence to utter its harsh call note, and this is a signal for a number of them to collect and pursue each other vigorously, their whole demeanour being very much like that of the Blackcap.

During September their numbers gradually decrease, and towards the end of that month the majority have left this country, though solitary individuals still remain until the early days of October. Their food is similar to that of the Whitethroat.

The song itself requires little description. It is by no means so highly developed a production as that of the Whitethroat. When the males first reach us in the spring they sing incessantly as they travel in search of food, but after the females arrive they are more silent than many other species, though solitary individuals can be heard warbling even as late as the end of June. Of imitation there is very little; I can only recollect hearing two species copied, *i.e.*, the Linnet and Sedge Warbler, and this was during a male's excitement at the presence of another male before the females had arrived. The song itself varies considerably in different countries and even in different districts. When in Hungary I pursued a male, which was singing continuously, for some distance before I discovered to what species the owner of the voice belonged.

This local variation is a curious and marked feature of the song of many birds. For some years I was conscious of a difference in the song of individuals of the same species in districts not far apart, but until I commenced to keep records, and make mental comparisons in different and widely separated localities, I did not realise to what an extent this local variation existed, and I was certainly not prepared to find so astonishing a divergence in the song of one and the same species.

The Whitethroat that enlivens the roads and lanes of our Midland counties has a different voice from the Whitethroat

on the shores of Loch Lomond, and both of these again differ in this respect from the same bird in the Island of Texel. The Wren in Worcestershire has a different song from that of the Wren in Donegal and Sark, and the Willow Warblers that grace the banks of the Danube can be readily distinguished by their notes from those in this country.

The subject is one of some difficulty, and is further complicated by our having to rely solely on so delicate an instrument as the human ear. But it should be our first aim, no matter what the problem with which we are confronted in Nature, to attempt to find some one characteristic which extends to every case, or at any rate obtains in a large number of them, and upon which we can base our further investigations. This, I believe, we can do in the present instance, always, however, bearing in mind the imperfections to which the human ear is liable.

If we take the Midland counties as our starting-point, and from thence journey in a westerly or south-westerly direction, we shall find that as we approach the coast of Wales, or of the south-western counties, the tendency is for the pitch of the song of many species to become gradually lower. But passing over these slight differences, we will still continue west, across the Irish Sea and across Ireland, until we finally reach the West of Donegal, where, having selected the song of one of the more common species, we will proceed to make comparisons with that of the same species in any one of the counties from which we started. Well, to my ear there is no doubt about the difference; the Blackbird pipes in a lower key, the cheery song of the Wren is more mellow, and even the familiar call note of the Chaffinch has gained some subtle difference. Leaving this, however, we will return to our starting-point, and journey in a southerly direction until we reach the Channel Islands. Here we shall find the same conditions prevailing as in Donegal—namely, a uniform lowering of the pitch; and yet again comparisons made on the west coast, or even on parts of the north-east coast of Scotland, will

produce similar results. The song of the Wren is a good example, since the variation is so considerable, and yet so strikingly similar at the extreme westerly and south-westerly points mentioned. In Worcestershire the song is commenced with some peculiarly high notes, but the impression left upon my mind after listening to it in Donegal or Sark is that these notes are missing. Whether this is really the case requires the testimony of more than one person, but the whole song is undoubtedly pitched lower.

Returning once again to our starting-point, we will proceed in an easterly direction to Holland, Belgium, or even as far as Hungary, and make a similar series of comparisons. What do we find? Why this, that the character of the song of many species, such as the Whitethroat, Garden Warbler, or Willow Warbler, is altered, in some cases to such an extent as to be almost beyond recognition, but that in the majority of cases there is *no* lowering of the pitch.

From these comparisons it will be seen that, speaking generally, the tendency is for the pitch to become gradually lower as we advance into a climate more and more dominated by the Atlantic; and this result is what we should anticipate, for the damp air would cause a decrease in the tension of the vibratory muscles with a corresponding decrease in the number of vibrations and a consequent lowering of the pitch. Therefore it seems to me that we need have little hesitation in attributing this effect to climatic influence, the more so since, on turning our thoughts to the human voice, we find corroborative evidence, in that the vocal ligaments are similarly affected by a damp atmosphere. And if it be thus true that a damp air decreases the tension, it must be equally true that a drier atmosphere will tend to increase it with a consequent raising of the pitch; and this is all that is really required to cause unlimited variation. Certain notes may be lost, new ones may be added according to the range of vibration permitted by any one particular climate, and coincidentally the tone may be changed, with the result that the song may become completely transformed.

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Thus far we have a clear case, since we are more or less guided by actual experience, but the subject now enters a more difficult and at the same time more speculative stage. I have referred to the great divergence in the song of the Lesser Whitethroat in Hungary, when compared with that in our Midland counties, and what we have to consider more particularly is how this change has been brought about. For this purpose it will be sufficient to confine ourselves to this one species, although it must by no means be thought that this is an exceptional case; other instances could be given showing quite as remarkable a variation. Now the influence of climate is no doubt considerable, but it is incredible that it can be so potent as to cause an immediate transformation each recurring season in the song of each individual migrant upon arrival at its destination; for this would not only imply an alteration upon its finally reaching its goal, but a continuous process of change from the moment it left its winter home.

The Lesser Whitethroat, like the majority of our summer migrants, winters in Africa, and in the spring migrates northwards to its breeding territory, in some cases passing over a great portion of Europe on its way thither; consequently we should have to assume that in every country, in almost every district, through which in its wanderings it would be compelled to pass, it would be gifted with a different voice and a different song, which is beyond belief. And if it be asked whether it is not possible that the change is produced gradually throughout the season, we can, fortunately, be guided in our reply by actual experience; for it is an observable fact that no appreciable change does take place during the season; the song of the Lesser Whitethroat is the same both as regards type and tone upon the first day of its arrival as it is one or two months later, excepting as regards the gradual deterioration in quality, which is common to all species whose vocal powers are highly developed, and is a different matter. If, therefore, we are right in concluding

that the action of climate could never have produced so remarkable an alteration instantaneously, and, moreover, are confident that no perceptible change does take place throughout the season, how can we explain the fact that the song of the same species has diverged to so large an extent? To this there can be but one reply—namely, that the development in any one direction has been continuous through a long period of time. We have good reasons to think that a bird returns more or less to the same district year after year, and supposing this to be true, it is possible that the change has been wrought by degrees, but by what means we cannot tell, for in my opinion it is a case in which natural selection must be excluded, since it is unreasonable to suppose that slight changes of tone can ever have been of sufficient importance to constitute their presence a matter of life and death in the struggle for existence; and, moreover, it is demonstrable that they have not been so, since we are able to recognise innumerable variations in the song of any one species scattered throughout Europe, and at the same time find that species as relatively plentiful in one district as another. Climate could never have been a cause of song, but by some such means it may have determined the lines along which any particular development has taken place.

I wish it to be clearly understood that I regard this discussion solely as a preliminary foundation upon which further investigation can be based; for I can find but passing reference to the subject in any work on natural history, and then only to the possibility of the existence of some variation in the song. All I claim to have shown, beyond the fact that this variation is considerable, is the possibility, perhaps probability, of there being some connection between the type of the song and the climate. Further than this my remarks are entirely presumptive.



GREENISH WILLOW WARBLER.

Phylloscopus viridanus, *Dresser, Birds of Europe*, vol. ix. (Supplement), p. 87, pl. 651, fig. 1 (coloured figure of adult), 1895; *Lilford, Coloured Figures*, vol. iii, p. 65, pl. 33 (coloured figure of female), 1897; *Saunders, Manual of British Birds*, 2nd Ed., pp. 65-66 (woodcut), 1897.

DESCRIPTION OF THE PLUMAGE.

Adult Male in Spring.—The upper parts are olive green, slightly darker on the crown, but somewhat lighter on the rump. The wings and tail are brown, the feathers being edged with much the same colour as the back, though a little more greenish. The outer edge of the outermost tail-feather and primary is light brown. The greater secondary wing-coverts are olive brown tipped with white, and the median coverts, bastard wing, and primary coverts olive. Thus there is only one light bar across the wing. There is a distinct whitish yellow superciliary stripe, the lores are ash grey, and the sides of the head light olive green. The under parts generally are buffish white, but slightly more olive buff on the sides of the breast and flanks, and the under surface of the wings and tail is ash grey, the feathers having white shafts. Upper wing-coverts are light sulphur yellow. Upper mandible is dark brown, and the lower brown at the tip, but buff colour at the base. Iris is dark brown, and feet brownish olive.

In winter the plumage is duller.

The young resemble the adults, but the colouring is not so bright.

GEOGRAPHICAL DISTRIBUTION.

This species is only twice recorded as having visited the **British Isles**, a female being obtained on the Lincolnshire coast, and a male at Suleskerry Lighthouse, Sutherlandshire, both during the autumn migration. Gätke mentions it as having occurred three times in **Heligoland** on migration, but beyond this there are no records for **Western Europe**. Its summer home commences in the north-eastern part of **European Russia**, the western limit being the provinces of Olenetz and Jaroslav. In parts of the Ural Mountains it is very numerous, more especially in the Province of Perm. The Province of Orenburg is also visited, and it is not uncommon on the shores of the Caspian Sea. Eastward it is found breeding in **Turkestan**, the Altai Mountains, **Bokhara**, **Gilgit**, and **Kashmir**.

It winters in parts of **India**, **Ceylon**, **Burma**, and **Cochin China**.



SIBERIAN CHIFF-CHAFF.

Phylloscopus tristis, Dresser, *Birds of Europe*, vol. ii, pp. 477-483 (1875).

DESCRIPTION OF THE PLUMAGE.

Adult Male in Spring.—The upper parts are olive brown, slightly more greenish and rather lighter on the rump. The wings are brown, the secondaries being broadly edged with the same colour as the back, only, slightly more greenish. The secondaries, greater coverts, primaries and their coverts are narrowly edged with light brown, whereas the median and lesser coverts are olive brown and the bastard wing dark brown. The tail-feathers are brown edged with the same colour as the back. There is a light superciliary stripe, the lores are brownish buff, and the sides of the head light olive brown. The under parts are whitish, washed with buff on the crop and the sides of the breast. The under tail-coverts are whitish buff and the under side of the tail greyish lavender, the shafts of the feathers being white. The under parts of the wings are light brownish grey, and the axillaries and under wing-coverts bright lemon yellow. The bill is horn brown, the base of the lower mandible being brownish pink. Iris is dark brown, and the feet blackish brown.

The female resembles the male, the young being somewhat duller.

GEOGRAPHICAL DISTRIBUTION.

There are a few records of the occurrence of this eastern species in **Great Britain**, but only on migration, most of which come from Fair Isle. In **Heligoland** it has been obtained once, and from **Italy** there are two records. Its breeding ground extends from the valley of the Petchora and the Central Urals on the west, over **Northern Siberia** and the Altai Mountains to Lake Baikal on the east. In the Petchora Valley it has been found as far as 68° N. lat., and in the valley of the River Obi it is numerous. Southwards the bird is not uncommon in the Province of Perm, more especially in the neighbourhood of Ekaterinburg. Eastwards we find it inhabiting the whole of the valley of the Yenisei, but beyond this it becomes scarce and is unknown in Trans-Baikal. In parts of **Southern Siberia** it is not uncommon, and **Turkestan** seems to be visited to a large extent on migration. In winter it visits **Baluchistan** and **India**.

TEMPORARY TITLE PAGE

THE
BRITISH WARBLERS
A HISTORY WITH PROBLEMS
OF
THEIR LIVES

BY
H. ELIOT HOWARD, F.Z.S., M.B.O.U.

ILLUSTRATED BY HENRIK GRÖNVOLD

PARTS 1—4

WITH 17 COLOURED AND 30 PHOTOGRAVURE PLATES AND 6 MAPS

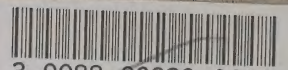
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